

**Central Pacific Transcontinental Railroad, Tunnel 28
Southern Pacific Donner Pass Route Tunnels
Milepost 134.75
Applegate vicinity
Placer County
California**

HAER No. CA-204

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

**Historic American Engineering Record
National Park Service
Western Region
Department of the Interior
San Francisco, CA 94107**

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HISTORIC AMERICAN ENGINEERING RECORD

CENTRAL PACIFIC TRANSCONTINENTAL RAILROAD, TUNNEL 28

HAER No. CA-204

Location: Milepost 134.75
UTM: 10-674900-4319220
Quad: Colfax, Calif. 7.5', 1949 (photorevised 1973)
(west portal)
UTM: 10-675340-4320145
Quad: Colfax, Calif. 7.5', 1949 (photorevised 1973)
(east portal)

Date of Construction: 1908-10.

Engineer: Southern Pacific Railroad Engineering Department.

Present Owner: Union Pacific Railroad, 1416 Dodge Street, Omaha NE 68101.

Present Use: Railroad Tunnel.

Significance: The Central Pacific First Transcontinental Railroad is a segment of the western half of the first transcontinental railroad, built from Sacramento, California to Promontory Summit, Utah between 1863 and 1869, where it joined the Union Pacific Railroad which had built west from Omaha. For the purpose of the current project, the first transcontinental railroad was found likely to be eligible for the National Register of Historic Places at the national level of significance under Criterion A for its significance in transportation history, in uniting the East and the West, and in the development of the West. The railroad's period of significance is 1869 to 1945, from the line's completion in 1869, through the years of its role in the settlement and development of the West, to the conclusion of the railroad's achievements in World War II. Tunnel 28 is a contributive element of this historic property.

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I. DESCRIPTION

Tunnel 28 is a 3,200-foot, single track railroad tunnel, with granite ashlar portal faces and wingwalls. As-built, the tunnel was concrete-lined for several hundred feet in from each portal, with the remainder lined in redwood timber; the railroad has subsequently covered the timbering with shotcrete. The tunnel is on a tangent (no curve) alignment, and carries the tracks of the Union Pacific Railroad's (formerly Southern Pacific) Donner Pass line.

II. HISTORICAL INFORMATION

Contractors, Utah Construction Company of Ogden built Tunnel 28 (originally numbered Tunnel 13) in 1908-10 as an element of the reconstruction and double-tracking of the original Central Pacific line between Rocklin and Colfax. [For a full history of this line and of this undertaking, see the documentation set for the Central Pacific Transcontinental Railroad (Southern Pacific Overland Route) (Southern Pacific Donner Pass Route), Southern Pacific Donner Pass Route Tunnels, HAER No. CA-196.] After assuming control of the Southern Pacific/Central Pacific and merging them with the Union Pacific in 1901, Edward H. Harriman had embarked on a series of huge reconstruction projects system-wide. One of these was the double-tracking of the original Central Pacific line over Donner Pass, the first segment of which was from Rocklin to Colfax. In connection with this, Harriman also moved the roundhouse and locomotive shop facilities originally built at Rocklin by the Central Pacific, to nearby Roseville where he built a much larger and more modern facility to handle the larger locomotives he was bringing onto the system.

Two contracting firms divided the work, with Utah Construction Company building the portion from Colfax west to Clipper Gap, and Erickson & Petterson handling the work from Rocklin east to Clipper Gap. All the tunnels, whether single- or double-track, conformed to Southern Pacific Common Standard plans.

Utah Construction Company built their tunnels by driving two drifts (small pilot tunnels) at the spring line of the final arch. They then drove a third drift at grade level and centered, roofing it with loose timbers. Workers then blasted the "bench", the material between the floor of the upper drifts and the ceiling of the lower drift, then removed some of the lower drift's roof timbers to drop the loose material down into dump cars for removal. At Tunnel 28, crews faced the longest tunnel on the Rocklin-to-Colfax reach, a 3,200-foot bore through the northwest slopes of Hotchkiss Hill. The contractors encountered clay shale at each end of the tunnel, with slate in the center. Working from both ends, the crews took fifteen months to drive all but the last 400 feet. At this tunnel, because of the size of the job, they also used a small air-operated power shovel to take out the bench.

It was at Tunnel 28 that Utah Construction built its own power plant to supply electricity for the air drills, lights, pumps, and ventilating fans. Due to the length of the bore, smoke hung badly in the tunnel after blasting. The solution was to run a suction pipe up to the headworks. After detonating a charge, crews turned on the air supply to the drills and started the suction fan. While effective, this system was slow in clearing the air sufficiently to allow work to proceed. The contractors then experimented with other methods, including placing the suction pipe about 400

feet back from the heading since that was the greatest distance the smoke seemed to reach, and then exhausting compressed air close to the headworks; they also tried omitting the suction pipe and simply injecting compressed air at the headworks to blow the smoke completely back out of the portal. In order to alleviate fumes from the dynamite, they inserted an ammonia cartridge with the dynamite, the ammonia fumes neutralizing those of the explosive; the amount of ammonia used varied with the size of the explosive charge.

This tunnel received more concrete lining originally than the other tunnels on the line because when it was begun, the intent was to fully line all the tunnels, so crews drove the first part based on that expectation. Too, the roof was thin at the west end, and crews encountered water in the rock at the east end, making longer-than-average concrete lining expedient.

III. SOURCES

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United States Geological Survey. Topographic map. Colfax, Calif. quadrangle, 7.5' series, 1949 (photorevised 1973).

IV. PROJECT INFORMATION

As a result of the 1996 merger of the Union Pacific and Southern Pacific Railroads, a federal undertaking under the jurisdiction of the Surface Transportation Board of the U.S. Department of Transportation, and in order to accommodate freight trains utilizing longer and taller cars and loads--tri-level auto rack cars and cars carrying double-stacked containers, the Union Pacific will need to increase tunnel clearances on the former Southern Pacific Donner Pass Route. The tunnels, built between 1868 and 1925, are contributing elements of the National Register-eligible Southern Pacific Donner Pass Route Tunnels Historic District. All tunnels have been laser-measured and the railroad will determine clearance needs on a tunnel-by-tunnel basis. Some, because of curved alignment, will require interior work to allow for longer cars such as tri-level auto rack cars; others, including Tunnel 28, will require both interior and portal work to provide sufficient vertical clearance for "double-stack" container cars. The latter work may impact the character-defining tunnel portals if crown mining of the tunnels (as opposed to lowering the tunnel floors) is selected. Inasmuch as this would cause an adverse effect to the tunnels, Union Pacific has elected to record the tunnels for the Historic American Engineering Record. Documentation was carried out by P.S. Preservation Services, John Snyder Field Director and Historian, and Ed Andersen, Photographer. Photos were made in August 1997, and research was carried out from August 1997 through March 1998.